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Appendix Z. Classes of Measures Used in the Behavioral Sciences, the Nature of the Data That Derive from Them, and Some Comments as to the Advantages and Disadvantages of Each.

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Six classes of measures are listed in this appendix: Interviews (structured and unstructured); Systematic Observation (diary records, check lists, rating scales, and running records using preconceived category sets); Standardized Objective Measures (intelligence and aptitude tests, achievement measures, and measures of personality, attitude and interest); Teacher Made Tests (short answer, essay and products); plus several nonobtrusive measures. Tables indicate the form, data level, and particular strengths and weaknesses of each. This document and SP 002 155-SP 002 179 comprise the appendixes for the ComField Model Teacher Education Program Specifications in SP 002 154. (JS)

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APPENDIX Z--CLASSES OF MEASURES USED IN THE BEHAVIORAL SCIENCES, THE NATURE OF THE DATA THAT DERIVE FROM THEM, AND SOME COMMENTS AS TO THE ADVANTAGES AND DISADVANTAGES OF EACH

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CLASSES OF MEASURES USED IN THE BEHAVIORAL SCIENCES, THE NATURE OF THE DATA THAT DERIVE FROM THEM, AND SOME COMMENTS AS TO THE ADVANTAGES AND DISADVANTAGES OF EACH *

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Class of Measure	Data Form	Data Level	Particular Strengths	Particular Weaknesses
OBTRUSIVE MEASURES				
Interviews				
Structured - using fixed alternative items (agree-disagree, forced choice, rank order)	Category frequency counts e.g., total agreements or total "don't knows"	Nominal	Constant stimulus conditions; opportunity to clarify misunderstanding; ease of data preparation	Lacks the flexibility that is possible in an interview; data costly to obtain
	Total scores, e.g., number right or wrong	Ordinal		
	Rankings, e.g., preferences	Nominal, Ordinal		
- using open ended items	Category frequency counts (through content analysis)	Nominal	Constant stimulus conditions; opportunity to clarify misunderstanding	Data costly to obtain and prepare for analysis; requires extensive coder training
	Ratings (through content analysis)	Nominal, Ordinal		
Unstructured	Category frequency counts (through content analysis)	Nominal	Freedom to pursue a topic as the situation dictates	Stimulus only generally known, thus comparability of data is questionable; data costly to obtain and prepare; extensive coder training required
	Ratings (through content analysis)	Nominal, Ordinal		

* From H. Del Schalock, Measurement, in National Research Training Institute Manual, Teaching Research Division, Monmouth, Oregon, 1967.

Class of Measure	Data Form	Data Level	Particular Strengths	Particular Weaknesses
Systematic Observation (under either "naturalistic" or "experimental" conditions)				
Diary Records	Category frequency counts (through content analysis)	Nominal	None, except so far as it is better than no recording of an observation	Subject to the error of recall; subject to limitations of longhand recording; observations usually not focused
	Ratings (through content analysis)	Nominal, Ordinal		
Check Lists	Category frequency counts	Nominal	Provides focus and/or order to one's observations	Cumbersome for recording more than a few items; capable of handling a relatively limited range of data at one time
Rating Scales	Ratings	Nominal, Ordinal	Provides focus and/or order to one's observations; permits the summarization of large amounts of information in one score	Uncertainty of what the rating means, i.e., what cues/criteria it is based upon, thus comparability questionable; generally unreliable and lacking in evidence of validity
Running Records Using Preconceived Category Sets	Category frequency counts; (sequential ordering of behavior)	Nominal in sequence	Provides focus to observations; permits the handling of a large amount of information at one time; permits the sequential ordering of the behavior observed	Requires extensive observer training; data costly to obtain

Class of Measure	Data Form	Data Level	Particular Strengths	Particular Weaknesses
Standardized Objective Measures				
Intelligence and Aptitude Measures	Part test and/or total test scores	Ordinal Interval	Constant stimulus conditions; normative data available for reference; reliability and validity evidence available	Culturally and often symbolically dependent; limited sampling of situations requiring the application of "intelligence"
Achievement Measures	Part test and/or total test scores	Ordinal Interval	Constant stimulus conditions; normative data available for reference; reliability and validity evidence available	Culturally and often symbolically dependent; limited sampling of situations requiring the application of "intelligence" which reflect the level of achievement
Personality, Attitude, Value and Interest Measures	Part test and/or total test scores	Ordinal	Constant stimulus conditions; normative data available for reference; reliability and validity evidence available	Dependent upon the assumption that what one says is related to what one does or is, validity data limited

Class of Measure	Data Form	Data Level	Particular Strengths	Particular Weaknesses
Standard Projective Measures				
Association	Part test and/or total test scores	Ordinal	Standardized stimuli that invite free response; some involve "realistic" stimuli usually invite strong personal involvement	Analysis of highly dependent upon idiosyncratic interpretations; little evidence of reliability or validity
Completion	Category frequency counts; ratings	Nominal, Ordinal		
Teacher Made Tests				
Short answer tests (using agreement - disagreement, forced - choice or rank - order item forms)	Part test or total test scires	Ordinal	Constant stimulus conditions; easy to administer; easy to score; opportunity to standardize	Difficult to develop; response mode limited; test level limited to knowledge or described behavior in a situation response test
Essay tests and written documents	Ratings	Nominal, Ordinal	Offers opportunity assess application skills; easy to develop	Limited sampling of situations which relate to the property being tested; scoring difficult; little opportunity to standardize
Products (e.g., articles such as furniture, clothes, models of machines; experiments, etc.)	Ratings	Nominal, Ordinal	Offers opportunity assess application skills; easy to develop	Limited sampling of situations which relate to the property being tested; scoring difficult; little opportunity to standardize

Class of Measure	Data Form	Data Level	Particular Strengths	Particular Weaknesses
NONOBTRUSIVE/MEASURES				
Physical Traces e.g., wear on the floor in front of a display; wear on library books, accumulation of garbage or beer bottles, unspecified products (see above)	Any form of evidence as to erosion or accretion		Inconspicuous; uncontaminated by the measurement	Of limited utility in the behavioral sciences; gross; validity and reliability hard to establish
Documents and Products	Category frequency (through content analysis); ratings	Nominal, Ordinal	Rich sources of information; relatively easy to obtain; uncontaminated by the measurement process	Limited sampling of situations which relate to property being tested; scoring difficult; little opportunity to standardize
Simple Observation	Anecdotal records; ratings	Nominal, Ordinal	Some record of some things, which probably is better than nothing	Simply not enough structure nor clear enough specification of rules for assigning numerals to observations to permit it to be called measurement
Contrived Observation (Hidden Hardware)	Category frequency counts (through content analysis) Ratings (through content analysis)	Nominal Nominal, Ordinal	Permanent record of behaviors thereby permitting leisurely and multiple and analysis, uncontaminated by the measurement process	Violation of privacy; unethical